shown), may function as a solid-phase support for binding reagents or other reagents. Such a configuration allows especially efficient enhancement of the rate of mass transport of reagents to and from the solid-phase support. In another alternate embodiment, the surface of reaction enclosure **34** functions as a solid-phase support for binding reagents or other reagents.

[**0072**] It is preferred that sonication device **36** comprises a piezoelectric sonication device. Device **36** is preferably controlled by a sonication controller (not shown) such as an electrical control circuit or the like.

[**0073**] Device **36** mounts on device mount **38**, which is coupled to base **32**. Much like device **36**, device mount **38** preferably may be exposed directly to reagents **35**. Alternatively, device mount is encased in a protective covering (not shown). Device mount may transmit sonication energy from device **36** to reaction enclosure **34** through base **32**. Alternatively, device mount **38** is a shock-absorbing substance that minimizes the transmission of sonication energy from sonication device **36** to base **32**.

[**0074**] Although device **36** is shown immediately abutting device mount **38**, a small space may exist between device mount **38** and device **36** that allows device **36** to expand and contract or to otherwise move during sonication.

[**0075**] In operation, reagents **35** are introduced into reaction enclosure **34**. Sonication device **36** is energized and directly sonicates reagents **35**. Depending upon the composition of device mount **38**, sonication energy may also be transmitted to base **32** which conducts such energy to reaction enclosure **34**, and thus to reagents **35** contained therein. Alternatively, device mount **38** may transmit sonication energy to reagents **35**. The sonication energy causes reagents **35** to mix, speeding the rate of reaction among reagents **35**. Where enclosure **34** includes binding reagents or other reagents located at a solid-phase support, the sonication energy may also increase the rate of mass-transport of reagents to and from the support, thus, speeding the rate of binding reactions on the solid-phase support.

[**0076**] In certain applications it may be beneficial to prevent the transmission of sonication energy from the reaction enclosure to the main body of the cell, thus preventing the dissipation of sonication energy. Such isolation is particularly useful when the sonication generator is coupled directly to reaction enclosure **34**; to a component of enclosure **34**, such as a solid-phase support coupled to the enclosure; or to reagents within enclosure **34**.

[**0077**] **FIG. 4** illustrates a particular cross-sectional view of an assay cell **40** according to an embodiment of the present invention. Assay cell **40** includes a base **42**, a reaction enclosure **44**, a sonication device **46**, a device mount **48**, and a sonication isolator **50**. Base **42** comprises a conventional support material. Reaction enclosure **44** preferably comprises a transparent material and is coupled to sonication isolator **50**.

[**0078**] Sonication device **46** is a device for sonicating reaction enclosure **44**. Preferably, sonication device **46** may be exposed directly to reagents **45**. Alternatively, sonication device **46** may be encased in a protective covering (not shown) that is capable of transmitting sonication energy from device **46** to reagents **45**. Sonication device **46**, or a coating or material placed thereon (not shown), may function as a solid-phase support for binding reagents or other reagents. Such a configuration especially efficiently enhances the rate of mass transport of reagents to and from the solid-phase support. In another alternate embodiment, the surface of reaction enclosure **44** functions as a solid-phase support for binding reagents or other reagents.

[**0079**] It is preferred that sonication device **46** comprises a piezoelectric sonication device. Device **36** is preferably controlled by a sonication device controller (not shown) such as an electrical control circuit or the like.

[**0080**] Device **46** mounts on device mount **48** which is coupled to sonication isolator **50**. Much like device **46**, device mount **48** preferably may be exposed directly to reagents **45**. Alternatively, device mount **48** is encased in a protective covering (not shown). Preferably, device mount **48** is a shock-absorbing substance that minimizes the transmission of sonication energy from sonication device **46** to sonication isolator **50**. optionally, device mount **48** may be omitted entirely.

[**0081**] Sonication isolator **50** is preferably comprises a shock-absorbing substance that minimizes the transmission of sonication energy from sonication device **46** and mount **48** to base **42**. Sonication isolator **50** can be advantageously used to decrease the emission of acoustic noise from the cell.

[**0082**] Although device **46** is shown immediately abutting device mount **48**, a small space may exist between device mount **48** and device **46** that allows device **46** to expand and contract or to otherwise move during sonication.

[**0083**] In operation, reagents **45** are introduced into reaction enclosure **44**. Sonication device **46** is energized and directly sonicates reagents **45**. The sonication causes reagents **45** to mix, speeding the rate of reaction among reagents **45**. Where enclosure includes binding reagents or other reagents located at a solid-phase support, the sonication may also increase the rate of mass-transport of reagents to and from the support, thus, speeding the rate of binding reactions on the solid-phase support.

[**0084**] **FIG. 5** illustrates a particular cross-sectional view of an assay cell **60**. Assay cell **60** includes a base **62** and a sonication device **64**. Preferably, base **62** comprises a rigid material. A well **66** in base **62** contains assay reagents **65**. The inner surface of well **66** may function as a solid-phase support for reagents, such as binding reagents. In particular, a bottom interior surface of well **66** may comprise a solid-phase support material. Assay cells in the form of wells comprising electroactive solid-phase supports, e.g., fibril-plastic composite electrodes, for use in ECL assays are described in copending U.S. application Ser. No. _____ filed on even date herewith, and PCT Application No. _____ (WO _____) filed on even date herewith, both of which are incorporated by reference above.

[**0085**] Sonication device **64** is a device for sonicating well **66** and is structurally coupled to a bottom surface of well **66**. It is preferred that sonication device **64** comprises a piezoelectric sonication device. Device **64** is preferably controlled by a sonication controller (not shown) such as an electrical control circuit or the like. In an alternate embodiment, sonication device **64** is attached to a probe (not shown) that is inserted into well **66** during an assay procedure.

[**0086**] In operation, reagents **65** are introduced into well **66** and sonication device **64** is energized to directly sonicate